IN THE SPECIFICATION:

Please amend the specification as follows:

On page 5, line 21, after the paragraph beginning "FIG. 2a . . ." please add the following new paragraph:

A1

<u>FIG. 2b is a three dimensional view of the sensor unit of FIG. 2a with the cover in place;</u>

On page 6, line 15, please replace the following paragraph and after that please add the following new paragraphs:

A2

FIG. 8<u>a</u> is a block diagram of a wireless apparatus of the present invention; ~~and~~

<u>FIG. 8b is a block diagram of a remote processing unit of the present invention; and</u>

<u>FIG. 8c is a schematic diagram of a PC host system for communicating with the sensor module system or remote processing unit of the present invention; and</u>

On page 13, please replace the paragraph beginning on line 8:

A3

MicroStrain, Inc. designed and has long been marketing wearable dataloggers for tracking trunk inclination with biofeedback through a vibrating pager enclosure, termed the Virtual Corset ~~(Photo 1)~~. These devices run for approximately six weeks using a single AA size battery. Data are recorded in an on-board non-volatile memory and can be downloaded via a connection to the serial port of a personal computer. Inclination is measured using a triaxial array of orthogonal static & dynamic response accelerometers. Preferably the inclinometer has capability to measure 360 degrees about at least one axis, as provided in a sensor available from Microstrain, Inc. called FAS-A. Even more preferably the inclinometer has capability to measure 360 degrees about two axes, which can be accomplished by providing three orthogonal accelerometers for each device attached to a body segment. For example, for measurement's of a person's torso, such a device provides measurement of flexion/extension (forward and backward bending) and lateral bending (sideways bending) .

On page 14, please replace the paragraph beginning on line 22:

A4

The present invention links a triad of dynamic and static response accelerometers

and a triad of magnetometers attached to a thigh and similar triads attached to the torso. The magnetometers provide absolute rotational position about an axis coincident with Earth's gravity vector (compass heading, or yaw). Network capability is provided by an RS-485 connection between the sensors. The apparatus of the invention was tested on subjects who were standing, sitting, and lying, and the results show that accelerometer outputs from sensors on thigh and torso were easily able to distinguish the three positions, as shown in Table 1.

On page 16, please replace the paragraph beginning on line 2:

Preferably the accelerometers have a DC response, enabling measurement of steady state accelerations such as the gravity vector and inclination with respect to the gravity vector. The same accelerometers can also be used to determine linear velocity by integrating measured acceleration over time. A block diagram of sensor system unit 20a, shown in **FIG. 1**, includes inclinometer 22. Two or three orthogonal DC response accelerometers can be used to form the sensing portion of inclinometer 22. Accelerometers 23a, 23b, and 23c, shown in **FIG. 2a**, such as the ADXL202 (Analog Devices, Norwood, MA) have a DC response, offer very small package size and use extremely low power. The output of each accelerometer 23a, 23b, 23c is fed separately to low pass filter 24. The cutoff frequency of low pass filter 24 is typically set to ½ the sampling frequency for antialiasing. The output of low pass filter 24 is sent to the analog input of flash based microprocessor 26 (16F877 or 16C877 from Microchip Technology, Chandler, AZ) which includes analog to digital (A/D) converter 28. A flash based microprocessor has on board flash memory for storing a program that will be run on the microprocessor. This on board flash memory plus additional non-volatile flash memory chip 30 are advantageous in that they allow for field reprogramming of the firmware without requiring replacement of the microprocessor chip. A crystal oscillator (not shown) is included with microprocessor 26 to control the timing of the microprocessor. Time is then determined in microprocessor 26.

On page 19, please replace the paragraph beginning on line 19:

Sensor system 20a can be located on one body segment, such as the lower trunk or the upper trunk, as shown in FIG. 6. A pair of sensor module units 20a, 20b can also be provided, one on each side of a joint, such as the hip joint. The difference between measurements of pair of sensor systems, 20a, 20b can be provided to detect angular position of the hip joint. Pairs of sensor systems 20a, 20b may be connected by ~~wired~~ wire 46 and connectors 48a, 48b, as shown in FIG. 1, or may use wireless communications, such as RF link 34a and antenna 49, also as shown in FIG. 1. The difference between the measurements of sensor systems 20a and 20b can be used to distinguish standing from sitting positions.

On page 20, please replace the two paragraphs beginning on line 2:

A8

Pair of sensor systems, 20a, ~~20b'~~ 20b can be provided to detect angular position of other joints in addition to or instead of the hip joint or to measure how that joint angle varies with time by taking the difference in the outputs of two sensor systems 20a, ~~20b'~~ 20b, one on each side of the joint, as shown in FIG. 6 for a knee joint.

Where two or more sensor systems 20a, 20b ~~or 20b'~~ are provided, sensor ~~systems~~ system 20b, ~~20b'~~ need not have all the components of sensor system 20a, as shown in FIG. 1. Input button 36 to biofeedback mechanism 33 and internet interace 34b can be eliminated from slave sensor ~~systems~~ system 20b, ~~20b'~~ since those functions can be provided by components in master sensor system 20a.

On page 21, please replace the paragraph beginning on line 4:

A8

While biofeedback mechanism 33 can be included within sensor system 20a, as shown in FIG. 1, biofeedback mechanism 33 can also be provided on a separate remote processing unit 39 that is used along with sensor systems 20a, 20b, as shown in FIG. 6. This separate remote processing unit 39 (or wireless version 39') may be strapped to the user's waist, as shown in FIG. 6 and 7, or it can mounted to another part of the user's body, such as the user's wrist, similar to a wristwatch, as shown in FIG. 9.

On page 21, please replace the paragraph beginning on line 21:

A9

Data transmission between simplified sensor system 20b and remote processing unit 39 can be accomplished by hard wiring the two, as shown in FIG. 6. Preferably communication between simplified sensor system 20b' and remote processing unit 39' would be wireless, as shown in FIG. 7 and 8a-8c. In either the wired or wireless embodiments, each sensor system 20b, 20b'can be simplified somewhat to eliminate biofeedback mechanism 33, nonvolatile memory 30, input unit 36, and internet interface 34b since these can be provided in remote processing unit 39'. Simplified sensor system 20b, 20b' would now include measurement sensors, such as inclinometer 22, signal conditioners 32, filters 24, a/d converter 28, microprocessor 26, power supply 35 and communication mechanism 34a. Microprocessor 26 is provided with each sensor system 20a, 20a' 20b, 20b', so data is reduced to inclination or joint angle as a function of time and so the time dependent inclination or angle data is transmitted in digital form.

On page 22, please replace the paragraph beginning on line 8:

A10

The wireless version of communication mechanism 34a of FIG.1 that is shown in

A10 Cont

FIG. 8a includes RF transmitter 50 (available from MicroStrain, Inc. Burlington, VT) for transmitting data from sensor system 20b' to remote processing unit ~~39~~ 39' shown in FIG. 8b through RF transceiver 52 for remote data processing there in microprocessor 54. Remote processing unit ~~39~~ 39' also includes data logging in non-volatile memory 56, biofeedback through biofeedback mechanism 58, and display 60, enabling the user to receive information, while power is provided to each of these components by power supply 62. Power supply 62 can be a small watch battery. Further transmission from remote processing unit 39' to host PC 64 is provided through RF transceiver 66, as shown in FIG. 8c.

On page 23, please replace the two paragraphs beginning on line 5:

A11

Inclination data can be transmitted along with error checking from two separate sensors without RF collisions by using correctly configured Strainlink™ modules operating at different frequency transmission bands (such as 916 MHz and 303.825 MHz). Thus, data from a single pair of sensor systems 20a, 20b or 20a', 20b', formed of dual or triaxial accelerometers and mounted on adjacent limb segments can be used as shown in FIGS. 1 and 7. Alternatively, a plurality of sensor systems 20b' can be simultaneously transmitted to remote processing unit ~~39~~ 39', remotely processed there, and further transmitted to provide range of motion data to the clinician, as shown in FIG. 9.

Software capable of allowing remote re-programming of pre-set parameters is provided in non-volatile memory 56 of remote processing unit ~~39~~ 39' for processing in microprocessor 54 in this unit (FIG. 8b). This is the same software described herein above that would otherwise be provided for each individual sensor system 20a, or 20a' for each pair of sensor systems, 20a, 20b or 20a', 20b' provided across a joint.

On page 24, please replace the paragraph beginning on line 9:

A12

Remote processing unit 39' includes display ~~56~~ 60 that may provide simple text commands. Display ~~56~~ 60 could also provide graphical representations of people doing various movements to communicate the desired information or instruction to the user. The graphical display allows for the display of a score, helps teach good posture, and helps the user through exercises. Remote processing unit 39' can also be used to perform mathematical computation of joint angles. It can be the unit that uses the data to conclude that a preset limit to range of motion had been exceeded too many times, that the subject has been too sedentary. Once the data from sensor system 20a, 20a', 20b, 20b' has been received and interpreted by ~~wrist -borne~~ wrist-borne remote processing unit 39 this unit could also provide feedback to the user using a vibrational, audible, or visual signal.